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William F. Caton
Acting Secretary
Federal Communications Commission
1919 M Street, N.W.
Washington, D.C. 20554

Re: ET Docket No. 93-7
Notice of Ex Parte Communication

Dear Mr. Caton:

On Tuesday, April 25, representatives of Echelon Corporation met separately with John T. Nakahata, Special Assistant to Chairman Hundt, Mary McManus, Legal Advisor to Commissioner Ness, and Jill M. Luckett, Special Advisor to Commissioner Chong, to discuss Echelon's views on the decoder interface proposals in ET Docket No. 93-7, as reflected in the attached documents distributed during these meetings. Representing Echelon were Oliver R. Stanfield, Vice President and CFO, and Jeffrey Blumfenfeld and the undersigned, counsel to Echelon.

Pursuant to Section 1.1206 of the Commission's Rules, two copies this letter are enclosed for filing. Please contact me should you have any questions in regard to this matter.

Sincerely,

Glenn B. Manishin

GBM:hs
Enclosures
cc (w/o encl.): John T. Nakahata
Mary McManus
Jill M. Luckett

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CC Docket No. 93-7 (Cable Equipment Compatibility Standards)

The August 15, 1994 proposal of the EIA/NCTA Cable Consumer Equipment Compatibility Advisory Group (C3AG) includes recommendations for a Decoder (descrambling) Interface that incorporates portions of a contested interim standard (CEBus® or EIA IS-60) for home automation. FCC adoption of the proposal would be unlawful, contrary to Commission procompetitive policies, and fundamentally inconsistent with technological innovation in the emerging home automation market by excluding or disadvantaging competing protocols. There is no technical need to use CEBus *or any other protocol* in the cable compatibility standards. "Minimal standardization" should be the watchword in computers, communications, information processing and other technologically dynamic US industries

1. Legal Scope of FCC Standardization Authority

   - 1992 Cable Act (Section 17) limits FCC standardization authority to adopting specifications for cable programming functions (scrambling/descrambling) in order to resolve conflicts with features of televisions and VCRs.

   - Cable Act directed FCC only to eliminate three specific incompatibilities preventing (1) watching one cable channel and recording another; (2) sequentially recording two or more scrambled channels; and (3) use of advanced TV equipment functions (picture-in-picture).

   - Cable Act does not authorize FCC to adopt rules for general "interoperability" of AV equipment. May 4 Report & Order recognizes that Commission must separate cable security/access from other functions (menus, decompression, etc.) that should not be standardized in order to promote competition and innovation (¶¶ 29, 42, 143).

2. Alternative Technical Solutions

   - C3AG proposal for control channel communications protocol is technically unnecessary and overly complex approach to simple engineering issue.

   - Several different descrambler/converter architectures provide efficient, cost-effective solutions to 1992 Cable Act incompatibilities, without standardizing home automation or other non-programming functionalities.

   - Information exchange needs between TV and "set-back" descrambler are limited to channel selection and other minimal data that can be supported in VBI bandwidth or low-level, competitively neutral protocol such as I^2C.

   - Modular approach would permit incorporation of descrambling/security functions into AV equipment, set-back boxes, or other devices in multiple configurations for different consumer needs, *and* allow retrofitting of large

TV installed base. In contrast, C3AG approach is completely incompatible with all current TVs in use, applying only to new "cable ready" televisions sold in 1997 or later.

- FCC should propose standard that governs physical interface only (*e.g.*, RCA jack, RS-232, RJ-11) with minimal or no use of command/communications protocol. This would apply highly successul CPE model (telephone equipment) to video programming, using similar open architecture and unbundling principles, without constraining service features through protocol limitations.

3. Exclusionary and Anticompetitive Effects

- C3AG proposal is attempt to have government mandate inclusion of one specific home automation technology into all "cable ready" AV equipment.

- Home automation is an emerging, competitively vibrant market. Premature standardization will stifle innovation and eliminate development of sophisticated, technically diverse solutions. "Minimal standardization" should be the watchword in computers, communications, information processing and other technologically dynamic US industries.

- Inclusion of a network protocol into decoder interface will either (a) create incompatibilities with other home automation protocols, or (b) require use of gateway protocol translators by competitors that are more costly, slower, and frequently interfere with network functionalities.

- Most likely approach to home automation is medium of existing electrical wiring (powerline). Under United States approach (Part 15), spread spectrum protocols like CEBus may control entire powerline, excluding other communications. CEBus technologies for powerline and RF media are proprietary and patented.

- Complex decoder interface architecture would position consumer electronics and/or cable industries as exclusive "gateway" to the home for communications of the future, competitively disadvantaging computer industry.

- "Plug and play" AV interoperability will be resolved by marketplace forces, as in PC and stereo equipment markets, without governmental fiat. Mandatory government standards are far more exclusionary than voluntary industry "consensus" standards, because the former would require a single technology and architecture for all "cable ready" TVs, VCRs and cable descramblers nationwide, freezing out future technical developments.

- FCC standardization of home automation market would be a disaster—much as if government had standardized the personal computer industry in 1982, before Windows or Macintosh operating systems even existed!

4. Misinformation on Equipment Compatibility

- *Claim:* "A robust control channel is needed and appropriate for 'future' services in addition to the Cable Act's specific directives."

  False. "Forward" compatibility with possible future AV services (video on demand, VDT, etc.) is not a proper scope of FCC standardization rules. Commission cable compatibility regulations will not *prevent* providers (AV, cable, computers, or others) from marketing any equipment for new video or information services.

- *Claim:* "CEBus is a limited AV equipment protocol."

  False. CEBus is not a special descrambling protocol, but "a home automation standard" still under development by EIA for "a wide spectrum of consumer products." (EIA 8/15/94 submission at p.8.) EIA's draft AV-Bus specification explicitly shows connections among AV devices and "other CEBus media" (powerline, RF), and also uses the CEBus messaging protocol for communication among devices in the "AV suite."

- *Claim:* "CEBus is not in the decoder interface (IS-105), but only a small subset of CEBus commands."

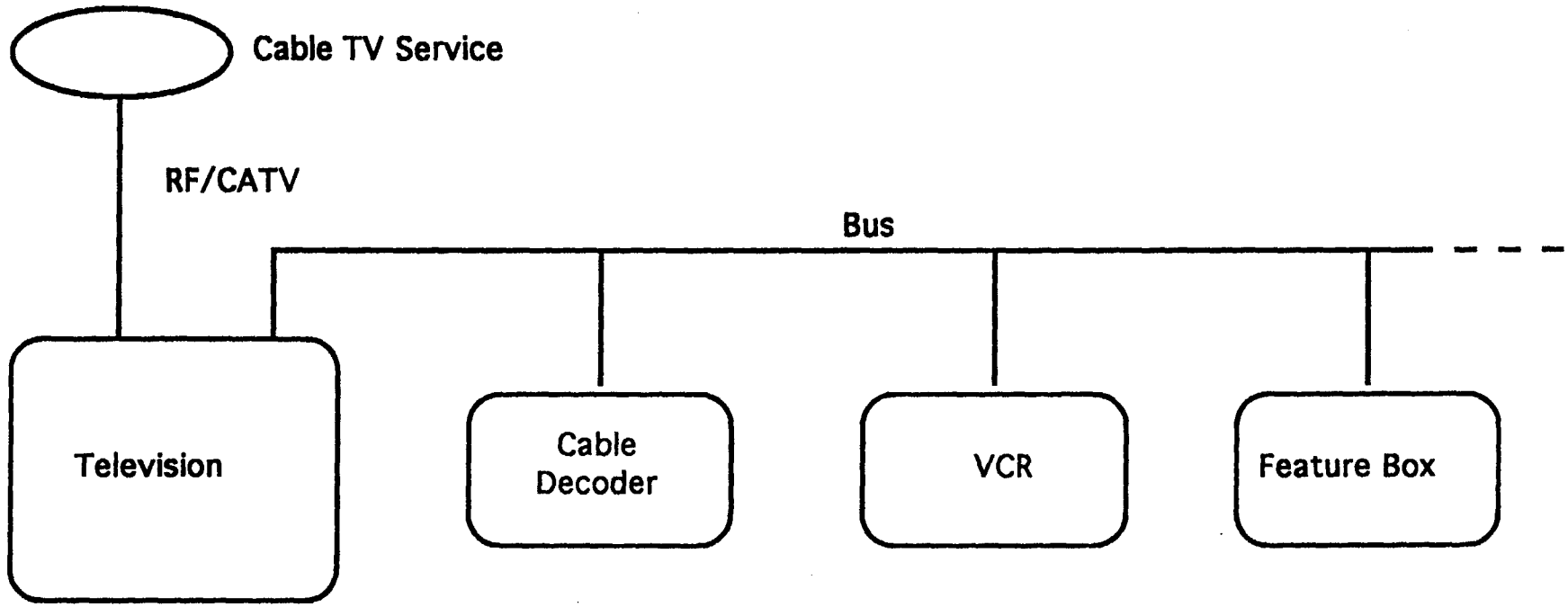
  False. The IS-105 decoder interface messaging protocol is specifically defined as CEBus and uses IS-60's CAL language. *See* C3AG 8/15/94 submission at pp. 17, 20; EIA 8/15/94 submission at pp. 4, 8, Attach. 1 at 2, 3. Decoder interface language and command set are easily extensible into other devices and media (*e.g.,* powerline) using spare microprocessor capacity.

- *Claim:* "No one is disadvantaged by the C3AG proposal or by inclusion of IS-60."

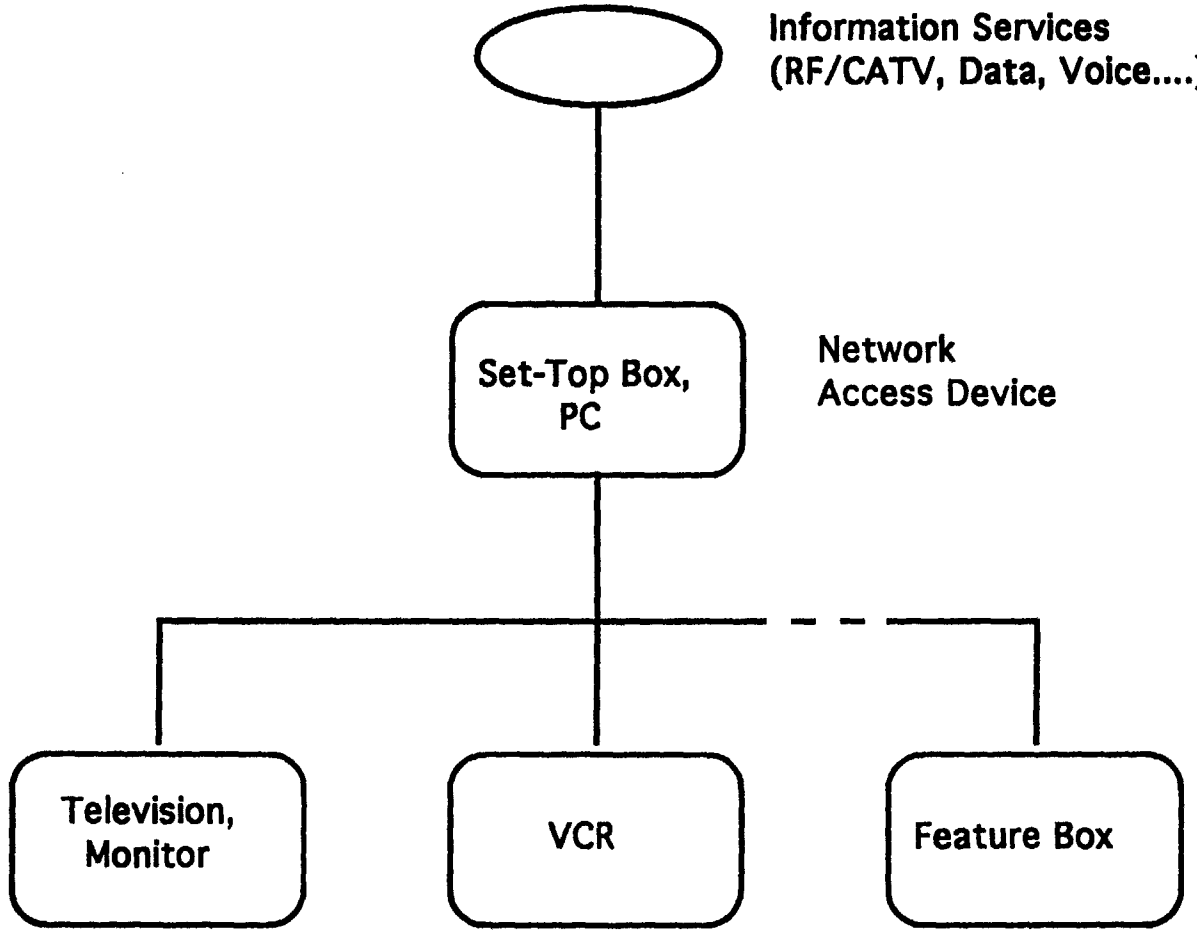
  False. Positioning the television set as the "gateway" for all video information coming into the home will artificially disadvantage American computer industry in the still nascent market for information superhighway services. Incorporation of a network protocol into the decoder interface will exclude or seriously impede rival home automation technologies through requirement of complex and costly protocol converters.

- *Claim:* "CEBus is not in EIA's new 'descrambling only' proposal."

  False. EIA has proposed a "descrambling only" solution, but to date has only outlined general nature of proposal. Although it may have told the FCC to the contrary in *ex parte* communications, EIA confirms that its present plan is to include CEBus when formally submitting proposed descrambling only architecture to FCC.



Proposed Cable/Consumer Electronics Decoder Architecture



"Natural" Evolution of Convergence Technologies

time constant of the loop is controlled by R1+R2. When controlled by the decoder, the time constant is controlled by R1 (ignoring R3). Also, when AGC is controlled by the receiver, R2 will form a second time constant with C2 plus C3 plus cable capacitance.

6. The minimum time constant of the receiver delayed AGC loop is important to the designer of the decoder, as it has an influence on the stability of the loop.

7. The decoder presents about nine volts when it is controlling the tuner and calling for maximum gain.

4.6. Digital Video

Support of Digital Video through the IF port and/or by some other means is under study. The result may be documented in this section or moved to a new section, as appropriate.

5. MULTI-PIN CONNECTION

5.1. Physical Specification

The multi-pin connection of the decoder interface carries baseband video and audio information from the decoder to the receiver in the form of balanced differential signals on twisted pair wiring. Additionally, the connection supports a bi-directional control line for control and status messaging between decoder and receiver. The multi-pin connection cable consists of ten individual twisted pairs to carry the control line, up to four audio lines, up to four video lines, and a common mode reference. The decoder interface requires support for a minimum of the control line, one video pair, one audio pair, and the common mode reference. Figure 8 depicts the multi-pin connection.

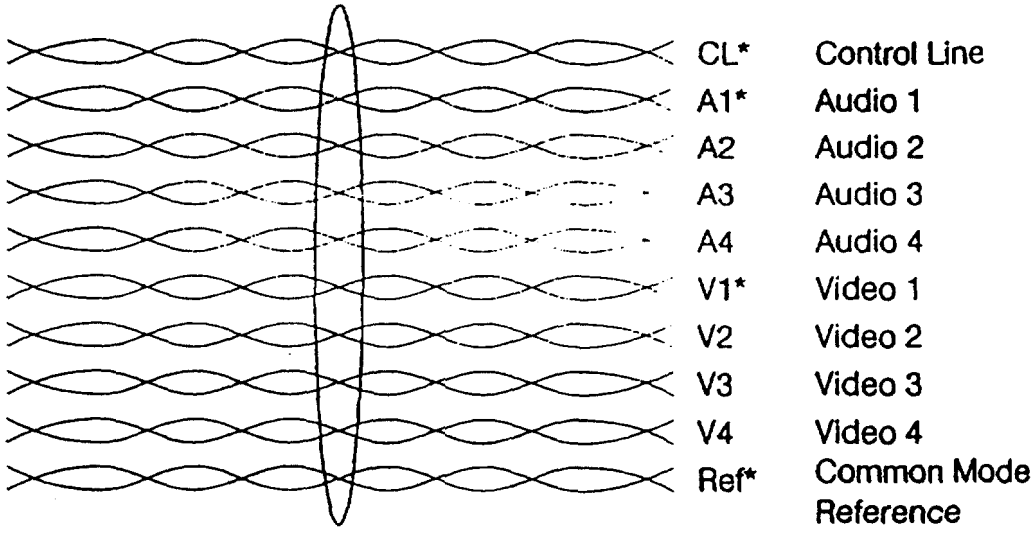


Figure 8. Multi-pin Connection Usage

5.1.1. Connector

The connector used for the multi-pin connection will be a 20 pin device using a positive mating snap-in lock mechanism. The connector will use 50 mil spacing leaf spring type contacts in two rows capable of repeated connection and disconnection. The physical outline and dimensions for

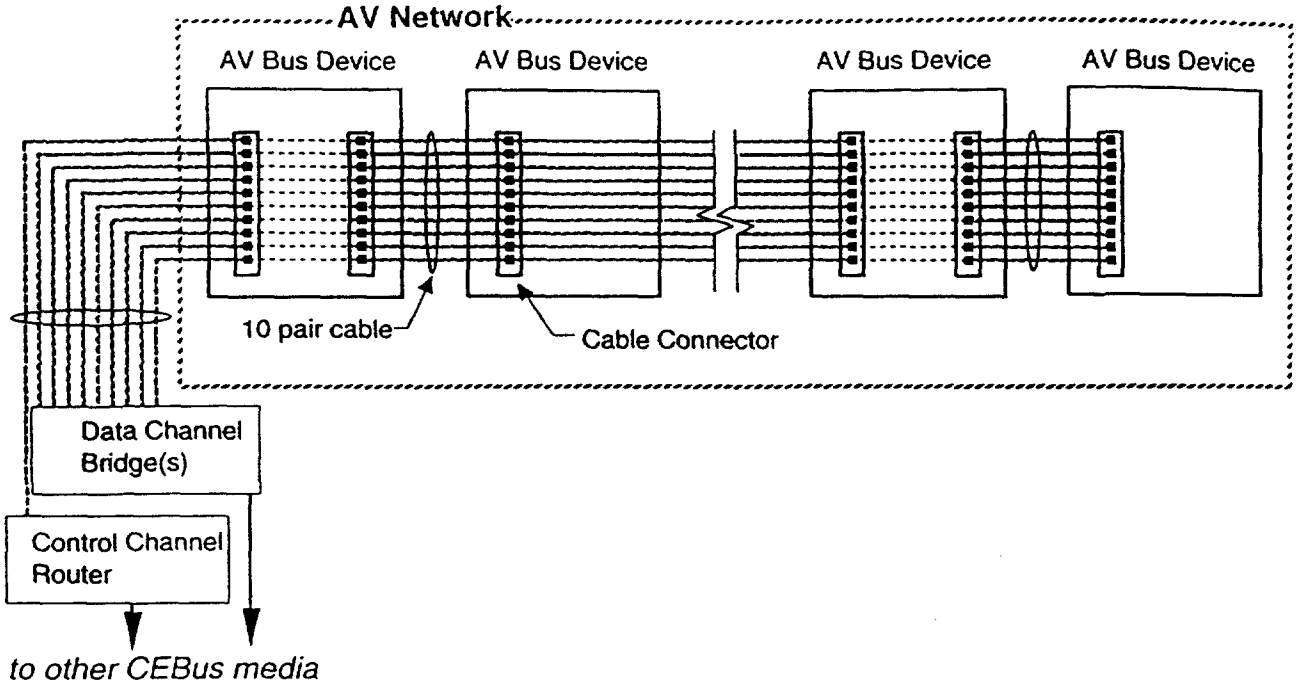


Figure 3.1 Basic CEBus Topology

The AV bus cable consists of ten individual twisted pairs to carry the control channel, four audio lines, and four video lines with one pair being used as a common mode reference (CMR) line. The cable is jacketed with a 20 conductor connector at each end. Figure 3.2 illustrates the construction and line naming of each pair of the cable.

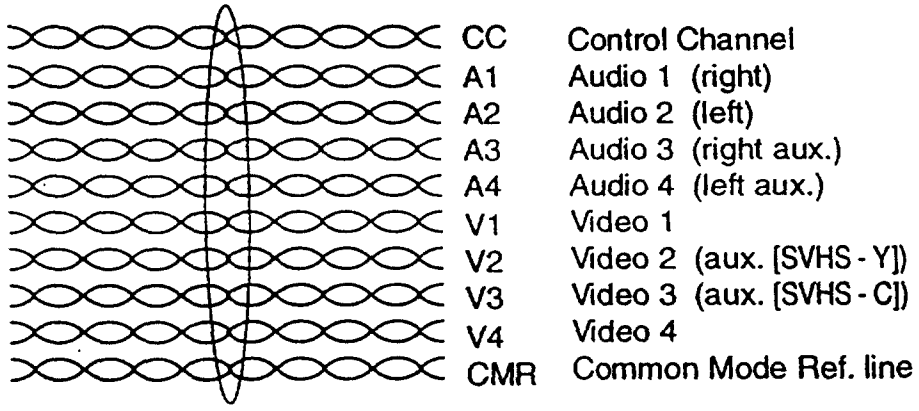


Figure 3.2 AV Bus Cable

The "Opt. Router" and "Data Bridge(s)" section shown in Figure 3.1 contains any optional control channel router and any data channel bridges for interconnection between AV networks and/or other CEBus media and is discussed in Section 6.

3.1.2 AV Bus Extensions

The optional extension of the AV bus, to include additional audio and video lines (in an additional cable), is under study. The additional lines would be under allocation control of the basic cable control channel requests. Any device which used the extension cable would be required to use the basic cable.